

CONCERN OF CONSTRUCTION INDUSTRY TOWARDS OCCUPATIONAL SAFETY AND HEALTH ISSUES

GAGANPREETKAUR¹, NANDITA MISHRA² & PUJA SINGHAL³

¹Research Scholar, Amity University, Noida

²Assistant Professor, Amity University, Noida

³Consultant, V. V. Giri National Labour Institute, Noida

ABSTRACT

The construction industry is the most important sector in the development of the country after agriculture sector in India. Apart from this, it is the one which has been neglecting the laws which are to be followed for its safe working and has the minimum concern for the welfare of its workers. Construction industry constitutes the most perilous work, but the work in progress is being done in the most precarious manner. This paper focuses on the lack of the safety measures which are neglected by these industries and the various occupational troubles which occur to the labour on the course of the work. A questionnaire was designed to be filled by the workers and a total of 236 respondents were interviewed from different construction sites of Delhi and NCR. Various questions in the context of the occupational safety, health and welfare measures were asked which were accompanied by open-ended questions to know their sufferings in detail. After the application of various tests which were applied to the data, results came out to be worst as they were meant to be. Further various recommendations and suggestions were given in this paper which is based on the fieldwork and on the test as well.

KEYWORDS: Construction Workers, Construction Industry, Occupational Health, Occupational Safety & Accidents

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INTRODUCTION

Holding the second place after agriculture industry, the construction industry has been playing an important role in a country's economic development. In any industry, the welfare of the workers is concerned with three main issues which are safety, health and environment of the respective workplace. But unfortunately, the number of the accidents and the fatalities occurring in the construction industry is quite disturbing. In order to maintain the smooth running of any industry, the safety and health measures of the workers must be kept pioneer by its organizers. The main pillars of the construction industry and the main force behind the work are its manpower. Without taking into consideration of the safety measure the work will be very risky, hazardous and may even result in death. This may further cause a delay in work, extra expenditure, and loss of human power. So health and safety measures are the keys to the successful completion of any work. So there is a need to set up the proper (SHE) factor that is safety, health and environment department so as to monitor the proper coordination of these 3 factors.

As compared to any other industry the construction industry holds the highest risk of accidents, the reason for this is the number of factors such as cost involved, time factor and the quality factor which is always kept as a priority before safety. The most important of all is that there is a need to categorize the happening of accidents so as to develop suitable measures for them. Such as the accidents can be scaffold accidents, accident due to slip, trip and

falls, crane accidents, ladder accident, accidents happening out of electric appliances hence the safety measures of all the above- mentioned accidents need to be different as well.

REVIEW OF LITERATURE

A pioneering study has been done by Heinrich in 1959 exploring the area of occupational safety. He has further categorized the causes of accidents as:

- Human error
- Technical and organizational problems (the 3's which are methods, material and machine)

He has further given a safety triangle with the name of Heinrich triangle



Source: Internet

Figure: 1

Which explains, for every major accident resulting in a major injury or fatality there are approximately 300 accidents which occur at a lower frequency. He has further concluded from this triangle that by reducing the occurrence of the lowered frequency accidents there are higher chances that the major accidents can be reduced. The initial step towards the prevention of construction accidents requires the identification of the root cause of accidents. The theory, such as accident causation and human errors serves as the benchmark for accident prevention and they can be utilized for the elimination of the aforesaid. Heinrich defines accident prevention as, "An integrated program, a series of coordinated activities, directed to the control of unsafe personal performance and unsafe mechanical conditions, based on certain knowledge, attitude, and abilities."

Apart from this, there are various health problems which are most common in the construction workers due to the course of work. Fever, respiratory infections, eye diseases, skin problems and muscular- skeletal are common among the civil workers (Thayyil Jayakrishnan, 2013). Other than this the construction workers are struggling to get a safe environment for their earning and for this there is a need to check and control the accidents to ensure the safety of the workers. For taking safety measures, there has been given a procedure to do so:

- Safety plans
- Safety training and meetings
- First aid and medical arrangements
- Management policies.

(Selvam A, Krithika Priyadarshini) Accidents have been categorized and the precautionary measures have been given accordingly.

RESEARCH METHODOLOGY

This particular research focuses the qualitative as well as quantitative research methodology. A detailed questionnaire was structured for the workers followed by the structured interview. The various issues related to the safety, health and welfare were asked for the workers. The total of 236 workers, male and female, both were interviewed, covering the construction sites of Delhi, Noida and Gurugram. Various tests have also been applied to the data collected so as to check the validity of the variables taken under study. The plight of the construction workers is almost same in all the construction sites and the managers are least concerned of this fact due to reason that the workers are uneducated and are unaware of their rights. This paper emphasizes to check the safety measures being followed and the wealth as well as welfare measures being followed by the construction companies. Further, the survey has been done only on those sites where more than 250 workers were employed so as to compare with the measures laid under the Building and Other Construction Works act 1996 (BOCW ACT).

DATA INTERPRETATION

Checking the Concern of the Companies for their Workers With Regards to the Toilets Provided and their Cleanliness using Regression

To check the relationship between the two variables, one being the dependent and the other being the independent variable. The dependent variable in this test is taken as the concern of the workers and the independent variables taken are a number of the toilets provided to the workers and their cleanliness as well.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511 ^a	.261	.257	.943
2	.528 ^b	.279	.272	.934

A). Predictors: (Constant), TOILETCLEANLINESS

B). Predictors: (Constant), TOILETCLEANLINESS, TOILETS

C). Dependent Variable: CONCERNFORWORKERS

In the above table the value of the R Square is .261 in the first model further explaining that 26% of the variability in the dependent variable is explained by this independent variable which is toilet cleanliness and in the second model the value of R Square is .279 which means that 27% of the variability has been explained by the independent variable. In both the models the adjusted R Square value is not having much difference from that of the actual R Square. This means that independent variable used in this model are not redundant.

Table 2: ANOVA^c

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	73.382	1	73.382	82.491	.000 ^a
	Residual	208.161	234	.890		
	Total	281.542	235			
2	Regression	78.423	2	39.212	44.980	.000 ^b
	Residual	203.119	233	.872		
	Total	281.542	235			

A). Predictors: (Constant), TOILETCLEANLINESS

B). Predictors: (Constant), TOILETCLEANLINESS, TOILETS

C). Dependent Variable: CONCERNFORWORKERS

The significance value of both the predictor in the above model comes out to be .000 which is less than .05 helping us to conclude that the model has no explanatory power or the model is useless, so we reject the null hypothesis.

So the independent variable does not help us to predict the dependent variable.

Table 3: Coefficients^a

	Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.676	.233		7.185	.000	1.217	2.136
	TOILETCLEANLINESS	.517	.057	.511	9.082	.000	.405	.629
2	(Constant)	1.629	.232		7.028	.000	1.172	2.085
	TOILETCLEANLINESS	.311	.102	.307	3.038	.003	.109	.513
	TOILETS	.233	.097	.243	2.405	.017	.042	.423

A). Dependent Variable: CONCERNFORWORKERS

- The above model predicts that a one unit increase in the cleanliness of the toilets will increase the dependent variable (concern for the workers) by .517 units being the other independent variables toilets fixed.
- In the above table, the significance value comes less than .05 which means we reject the null hypothesis and further states that the independent variable does help us to predict the dependent variable. Further, we can also comment that there is a positive correlation among them which means that the concern for the workers will increase with the increase in the number of toilets and be maintaining them through cleanliness and vice versa.

Testing the Safety Knowledge among the Workers on Site using CHI-Square Test

This test is used to check the dependence of the two nominal variables upon each other. Here the two variables are:

- Gender
- Safety knowledge

SETTING THE HYPOTHESIS

HO= (NULL HYPOTHESIS) The knowledge of the safety among the male- female are independent of each other.

Table 4: Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
SAFETYKNOWLEDGE * GENDER	236	100.0%	0	.0%	236	100.0%

The above table shows the total number of respondents which are 236 and there are no missing cases.

Table 5: Safety Knowledge * Gender Cross Tabulation

			GENDER		Total
			MALE	FEMALE	
SAFETYKNOWLEDGE	NO	Count	81	83	164
		Expected Count	101.5	62.5	164.0
	YES	Count	65	7	72
		Expected Count	44.5	27.5	72.0
Total		Count	146	90	236
		Expected Count	146.0	90.0	236.0

In the above table, the expected count of the safety knowledge among male and female workers are shown. It further shows the total number of male workers is 146 and count of female workers is 90 among the total of 236. The male workers showing a count of 81 against the expected count of 101 who are not having the safety knowledge. Whereas the expected count of female workers showing a count of 62 against 83 concluding that out of 90 female workers 83 does not have safety knowledge. Further, the table also depicts the expected count of 44 male workers against the actual figure of 65, which is positive that male workers are having the safety knowledge higher than the expected one. On the other side, the female workers show the drastic decline in the figures as 7 against the expected count of 27, which is the much lower as expected.

Table 6: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	35.455 ^a	1	.000		
Continuity Correction ^b	33.743	1	.000		
Likelihood Ratio	40.495	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases ^b	236				

- 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.46.
- Computed only for a 2x2 table

The above table having the value of 0 cells and having an expected count of less than 5 helps us to ensure that the assumptions have not been violated, so the minimum expected count comes to 27.46.

The Pearson Chi-Square test gives us the value of 35.455 with 1 degree of freedom, and as the significance value is .000 which is less than .05 ensures us to reject the null hypothesis and confirming that there is a significance difference between safety knowledge among the male and female working on sites.

FINDINGS AND SUGGESTIONS

- After conducting the various test on the data collected from the sites the real picture of the actual conditions prevailing on the construction sites came out. This is a male dominating industry, but still female are struggling to earn their livelihood. In spite of this fact, there is lack of equality in pay, safety knowledge, providing them with safety equipment and even in providing them with basic welfare measures. These workers are not provided safety induction training as a result of which occupational accidents are very common among them; moreover, the workers are habitual of this fact. Lack of proper sanitation, providing them with clean toilets and at many sites absence of sanitation facilities have forced the workers to go in open to attend their call of nature. Encouraging

the use of water-based paints instead of spirit based paint which is comparatively less hazardous and also keeping a check that while substituting one element with the other there also not be the substitution of the hazards associated with the new one.

- Working at heights with no safety belts, working without helmets, safety shoes are a major cause that they are suffering from many skin disorders. There is a need to educate the workers about the need to wear the safety equipment and to demand for the same if not provided. Timely cleanliness of the toilets should be done by the management so as to make the working place, as well as the environment disease, prohibited.

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